

MARKED-UP COPY OF ORIGINAL SPECIFICATION

[Description] TITLE OF THE INVENTION

METHOD AND [ARRANGEMENT] DEVICE FOR [INSTALLATION,] INSTALLING AND [A]
METHOD AND [ARRANGEMENT] DEVICE FOR [INSTALLATION] INSTALLING AND [FOR
OPERATION] OPERATING [OF] A SERVICE REQUESTED BY A USER COMPUTER

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is based on and hereby claims priority to PCT Application No. PCT/DE00/00610 filed on March 1, 2000 and German Application No. 199 13 094.9 filed on March 23, 1999 in Germany, the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] The invention relates to a method and [an arrangement] a device for installation, and a method and [an arrangement] a device for installation and for operation, of a service, which is requested by a user computer and comprises interface elements and user elements, on the user computer, and of a computer structure.

[0003] In general, data is transmitted between computers that are connected to one another, in methods and [arrangements] devices such as these.

[0004] [(1)] Principles of the World-Wide-Web (WWW) available on March 16, 1999, at: <http://www.w3.org/> discloses [an arrangement] a device for transmitting data between computers which are connected to one another.

[0005] The components of this [arrangement] device are parts of a communications network, referred to as the World-Wide-Web (WWW).

[0006] The communications network connects individual computers to one another in such a manner that these computers can interchange data in accordance with a predetermined transmission protocol, the "Transmission Control Protocol (TCP)/Internet Protocol (IP)". In order to allow data to be processed in a standard manner, much of the data is in a standard format, referred to as the Hyper-Text-Markup-Language format (HTML format).

[0007] Furthermore, suitable software for processing the data, such as a WWW-Browser, is installed on each individual computer.

[0008] Data transmitted in such a way may comprise image data, text data or multimedia data.

[0009] Furthermore, data such as this can be transmitted as part of a service which a computer can request in the communications network. One such service is, for example, provision of information.

[0010] In this case, the computer which requests the service in the communications network is referred to as the user computer or client. A computer which provides a service or information in the communications network is referred to as a server. The server may also be a computer structure which comprises individual computers connected to one another.

[0011] Within a service, the client or user computer can request the service from the server or computer structure via the communications network. During operation of the service, data is transmitted between the client and the server via the communications network.

[0012] The transmitted data comprises interface elements and user elements.

[0013] The expression interface elements means data which is required for transmitting the user elements between two computers, for example data relating to the definition of an interface between the two computers, or for processing or displaying the user elements by [means of] a computer, for example formatting information.

[0014] The expression user elements means data containing only the information requested within the service. The user elements also include any control characters.

[0015] This known [arrangement] device has the disadvantage that the information content of the data including both interface elements and user elements is low.

[0016] Furthermore, the known [arrangement] device has, in particular, the disadvantage that the amount of data transmitted within a service may be so great that rapid information interchange between the corresponding service provider and the corresponding user is impossible.

[0017] Particularly when transmitting data using the HTML format, information, for example formatting information, is transmitted which is not required for the purposes of the request by the respective user.

SUMMARY OF THE INVENTION

[0018] One aspect of [The] the invention is thus based on the problem of specifying [an arrangement] a device for operation of a service on computers which are connected to one

another, in which the amount of data which is transmitted within the service is comparatively small and can thus be transmitted quickly, and which [arrangement] device is not subject to the disadvantages of the known [arrangements] devices .

[0019] Furthermore, one aspect of the invention is based on the problem of specifying a method for operation of a service on computers which are connected to one another, in which the amount of data transmitted within the service is small, and the amount of data can thus be transmitted more quickly than when using known methods.

[0020] [The problems are solved by the arrangements and the methods having the features specified in the independent claims.]

[0021] In the case of a method for installation of a service, which is requested by a user computer and comprises interface elements and user elements, on the user computer, and of a computer structure, which has a first computer which manages the interface elements and a second computer which defines the user elements, the user computer and the computer structure are connected to one another. The interface elements are then transmitted from the first computer to the user computer. The first computer is then set up in such a manner that the first computer transmits the user elements between the second computer and the user computer.

[0022] In the case of a method for installation and for operation of a service, which is requested by a user computer and comprises interface elements and user elements, on the user computer, and of a computer structure, which has a first computer which manages the interface elements and a second computer which defines the user elements, the user computer and the computer structure are connected to one another. The interface elements are then transmitted from the first computer to the user computer. The first computer is then set up in such a manner that the first computer transmits the user elements between the second computer and the user computer. During operation of the service, only the user elements are transmitted between the second computer and the user computer.

[0023] In [an arrangement] a device for installation of a service, which is requested by a user computer and comprises interface elements and user elements, on the user computer, and of a computer structure which has a first computer, which is set up in such a manner that the interface elements can be managed, and has a second computer which is set up in such a

manner that the user elements can be defined, the user computer and the computer structure are connected to one another. Furthermore, the first computer is set up in such a manner that the interface elements can be transmitted from the first computer to the user computer. The user computer can then be set up in such a manner that the user elements can be transmitted between the second computer and the user computer.

[0024] In [an arrangement] a device for installation and for operation of a service, which is requested by a user computer and comprises interface elements and user elements, on the user computer, and of a computer structure which has a first computer, which is set up in such a manner that the interface elements can be managed, and has a second computer which is set up in such a manner that the user elements can be defined, the user computer and the computer structure are connected to one another. Furthermore, the first computer is set up in such a manner that the interface elements can be transmitted from the first computer to the user computer. The user computer is then set up in such a manner that only the user elements can be transmitted between the second computer and the user computer.

[0025] The [arrangements] devices are particularly suitable for carrying out the methods according to one aspect of the invention, or one of their developments which are explained in the following text.

[0026] The particular advantage of the invention is that only user elements are transmitted during operation of a service. This allows the maximum possible data transmission rate between computers which are connected to one another to be utilized extremely effectively.

[0027] This is possible in particular because, during the installation of a service, those interface elements which are associated with the service are transmitted to the user computer and are available there, for example by being stored in the user computer. Only the user elements are then transmitted to the user computer during operation of the services. The user elements can be processed using the interface elements which are available in the user computer.

[0028] The user elements include all the control characters.

[0029] [Preferred developments of the invention can be found in the dependent claims.]

[0030] An interface element is preferably what is referred to as a Graphical User Interface (GUI) object.

[0031] In one development, the first computer is connected both to the user computer and to the second computer. In a structure of computers which are connected to one another such as this, the first computer carries out the function of a service administrator or service manager.

[0032] The user computer is preferably a mobile terminal, for example a mobile telephone. This also allows relatively large amounts of data, such as text data, to be transmitted to the mobile terminal.

[0033] In developments, methods and [arrangements] devices are used for an information system, for example a travel information system.

[0034] The methods and [arrangements] devices are preferably used for what is referred to as a Personal Travel Assistant (PTA). This makes it possible, within a service, to transmit to a user travel information such as a departure time or arrival time of some public transport, or a transport delay message.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] [One exemplary embodiment of the invention will be explained in more detail in the following text, and is illustrated in the figures, in which:] These and other objects and advantages of the present invention will become more apparent and more readily appreciated from the following description of the preferred embodiments, taken in conjunction with the accompanying drawings of which:

[Figure]Fig. 1 shows a structure for a service system in a communications network;

[Figure]Fig. 2 shows components of a service system in a communications network;

[Figure]Fig. 3 shows an example of a local GUI element;

[Figure]Fig. 4 shows a sketch describing processes during installation of the service system;

[Figure]Fig. 5 shows a sketch describing processes during operation of the service system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0036] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout.

Exemplary embodiment: Personal Travel [Assistance] Assistant (PTA)

[0037] [Figure]Fig. 1 shows, schematically, the structure of a service system 100 in a communications network 120 in which individual computers are connected by [means of] connections via which data can be transmitted.

[0038] The service system 100 illustrated in [Figure]Fig. 1 is a travel information system, referred to as a Personal Travel [Assistance] Assistant (PTA), by [means of] which various services, such as services for defining travel information, can be made available to a user. Such travel information may be, for example, a departure time and an arrival time of a traffic connection between two locations which may be selected freely by the user. Such information is referred to in the following text as user information.

[0039] The user is linked to the communications network 120 by [means of] a communication terminal 101, such as a telephone or a computer. A service manager is connected to the user via a first data line 102, which links the communication terminal 101 to a first computer 103. Data is transmitted via the first data line 102 between the communication terminal 101 and the first computer 103, or between the user and the manager in the communication network 120. Furthermore, the communication terminal 101 has a processor 112 and a memory 114, which is linked to the processor 112 via a bus 113. Suitable software for processing the transmitted data is stored in the memory 114. During data processing, the software is loaded from the memory 114, and is run by [means of] the processor 112. Furthermore, the communication terminal 101 has a screen 115 and an input keyboard or keypad 116. The screen 115 and the keyboard or keypad 116 are connected via a bus 117 to the processor 112 and to the memory 114 in such a manner that signals can be transmitted.

[0040] The first computer 103 likewise has a processor 104 and a memory 106 which is connected to the processor 104 via a bus 105. A service is managed in the communications network 120 by the manager or first computer 103, using software which is stored in the memory 106 and is run on the processor 104.

[0041] The manager is connected to a service provider in the communications network 120 via a second line 107, which connects the first computer 103 to a second computer 108. The second computer 108 likewise has a processor 109 and a memory 111, which is connected to the processor 109 via a bus 110.

[0042] Data is transmitted via the second data line 107 between the first computer 103 and the second computer 108, or between the manager and the service provider.

[0043] A service offered by the service provider, such as the provision of information in the communications network 120, is provided using software which is stored in the memory 111 of the second computer 108, and is run by the processor 109 in the second computer 108.

[0044] [Figure]Fig. 1 illustrates only one user 101 and one service provider 108, in order to illustrate the structure of the service system 100. This clearly shows that a service system may have a number of service providers, who each provide a service, which may itself comprise a number of individual services, in the communications network and are each connected via a data line to the manager. Likewise, a number of users, who are each connected to the manager via a data line, can be included in the communications network 120. In this case, the first computer 103 or the manager in each case coordinates and monitors data transmission between one user and one service provider.

[0045] Functional and structural components of the service system 100 illustrated in [Figure]Fig. 1 are described in more detail in the following text and figures.

[0046] The functional components are run as autonomous application programs or as programmed code in a higher-level application program.

[0047] [Figure]Fig. 2 shows components of the user or communication terminal 210, components of the manager or first computer 220 and components of the service provider or second computer 230.

[0048] The arrows shown in [Figure]Fig. 2 each indicate a connection between two components, via which connection data can be transmitted. One arrow direction in each case indicates the direction in which data is transmitted between the two components.

[0049] [Figure]Fig. 2 shows the components of the user or communication terminal 210, referred to as local screen interface elements (locally Graphical User Interface (local GUI elements)) 211, what is referred to as a Graphical User Interface (GUI) - application 212, and what is referred to as a communication terminal interface (Device Interface Component (DIC)) 214.

[0050] In this case, the meanings of the components mentioned above are as follows:

[0051] Local GUI element 211: Local GUI elements 211 are screen interface elements which are managed by the manager or first computer 220 and are transmitted to the communication terminal 210 during installation of the service system 200, and are then stored in the memory of the communication terminal 210. A local GUI element 211 is in each case associated with the service (job) which is offered within the service system 200. The local GUI elements 211 are managed by the GUI application 212.

[0052] [Figure]Fig. 3 shows such a local GUI element, an input mask 300, which can be displayed on the screen 213 of the communication terminal 210, and can be actioned by the user by [means of] the input keyboard or keypad 215.

[0053] The user uses the input mask 300 to define a job which he would like the service system 200 to carry out. To do this, the user specifies the job by entering details which describe the job into the communication terminal 210.

[0054] In the input mask 300 shown in [Figure]Fig. 3, the job, determination of a means of transport, is described by details comprising the locally and regionally preferred means of transport 301, 302, 303, the significance of travel costs 304, the importance of time 305, and personal details 306, 307.

[0055] Furthermore, the input mask 300 illustrated in [Figure]Fig. 3 has what are referred to as control buttons 308, 309, 310, 311, 312, which are used to create the entry in the input mask 300.

[0056] GUI application 212: The GUI application 212 is an application program, for example an application program programmed in the programming language Java, which is stored in the memory of a communication terminal 210 and is run by the processor in the communication terminal 210. The GUI application 212 manages the local GUI elements 211. The user can use the GUI application 212 to request a service from the service system 200. In the process, the GUI application 200 activates the local GUI elements 211 associated with that service.

[0057] DIC 213: The DIC 213 is an interface between the communication terminal 210 and the first computer 220, and is used for monitoring and carrying out the data interchange between the communication terminal 210 and the first computer 220. The DIC 213 communicates with a component in the manager 220, referred to as a User Management

Component (UMC) 221, and a component of the manager 220, referred to as a User Component (UC) 223, and the GUI application 212 using defined protocols.

[0058] Furthermore, [Figure]Fig. 2, shows the components of the manager 220 and of the first computer 220, the UMC 221, the UC 223, what is referred to as a GUI directory 224, and what is referred to as a user directory 222.

[0059] In this case, the meanings of the components mentioned above are as follows:

[0060] User directory 222: The user directory 222 contains information about a user of the service system 200, or information about a number of users of the service system 200, which or who is or are authorized to use the service system 200. The information in each case includes, for example, a user name for a user, an associated password and a user profile. The user directory 222 and the UMC 221 are used to monitor access by a user to the service system 200.

[0061] UMC 221: The UMC 221 is required to register a user in the service system 200. The UMC 221 uses the user directory 222 to monitor a registration attempt by a user, and checks the access authorization of that user 210. If such a user has access authorization, the UMC 221 starts the UC 223. If a user 210 has no such authorization, the UCM 221 prevents the user from having access to the service system 200.

[0062] GUI directory 224: The GUI directory 224 contains information about screen interfaces for the services for the service system 200. This information in each case includes a name and an identification of the service, as well as the screen interface elements 225 associated with that service. The manager or first computer 220 manages the screen interface elements 225 using the GUI directory 224 and the UC 223.

[0063] UC 223: The UC 223 contains information about the individual services for the service system 200, and an association between screen interface elements 225 and the service.

[0064] Furthermore, [Figure]Fig. 2 shows components of the service provider or of the second computer 230, referred to as service components DC 231.

[0065] In this case, the meanings of the components mentioned above are as follows:

[0066] DC 231: A DC 231 is in each case an application program, for example an application program programmed in the programming language Java, by [means of] which one service is in each case carried out in the service system. The DC 231 are stored in the memory of the

second computer 230, and are each run by the processor in the second computer 230. One DC 231 is in each case activated by the UC 222.

[0067] The service provider 230 uses a DC 231 to define user information associated with a job defined by a user 210.

[0068] In the following text, [Figure]Fig. 4 will be used to describe installation of the service system, and [Figure]Fig. 5 will be used to describe operation of the service system, and updating of the service system, in more detail.

[0069] Components from [Figure]Fig. 4 and [Figure]Fig. 5 are provided with the same reference symbols as in [Figure]Fig. 2, where they relate to the same configuration.

[0070] The arrows illustrated in [Figure]Fig. 4 and [Figure]Fig. 5 each indicate a connection between two components, via which connection data can be transmitted. One arrow direction in each case indicates the direction in which data is transmitted between the two components.

Installation of the service system ([Figure]Fig. 4)

[0071] The expression installation of the service system for a user relates to the procedures which are carried out before a service system is first used.

[0072] During the installation of the service system 400 for a user, the user or the communication terminal 410, the manager or first computer 420 and the service provider or second computer 430 are connected to one another via data lines 401, 402.

[0073] The data lines 401, 402 may be variable or fixed data lines, with fixed data lines being activated for data transmission during the installation process.

[0074] During the installation of the service system 400, the user requests a service from the service system 400 for the first time (initial registration). In the process, the user starts the GUI application 412. The GUI application transmits request data to the UMC 421.

[0075] During the installation process, which is monitored by the UMC 421, the user's initial registration is carried out by storing information relating to the user in the user directory 422. In the process, the authorized services which the user can use in the service system 400 are defined. User access to an authorized service is protected by [means of] a password, which is stored in the user directory 422.

[0076] The UMC 421 starts the UC 423. The UC 423 uses the GUI directory 424 for the authorized services to determine the associated screen interface elements 425. The determined screen interface elements 425 are transmitted to the user or to the communication terminal 410, and are stored as local GUI elements 411 in the memory of the communication terminal 410.

[0077] Once these procedures have been carried out, the user or the communication terminal 410 is now set up so that only user information need be transmitted during operation of the service system.

Operation of the service system ([Figure]Fig. 5)

[0078] The expression operation of the service system by a user refers to the procedures which take place when using a service in the service system.

[0079] During operation of the service system 500, the user or the communication terminal 510, the manager or the first computer 520 and the service provider or the second computer 530 are connected to one another via data lines 501, 502.

[0080] The data lines 501, 502 may be variable or fixed data lines, which fixed data lines are activated for data transmission during operation.

[0081] During operation of the service system 500, the user requests a service from the service system 500 by starting the GUI application 512. The user uses the GUI application 512 to select a desired service. The local GUI elements 511 associated with that service are loaded from the memory of the communication terminal 510, and are displayed on the screen 513 of the communication terminal 510.

[0082] The user then registers for this service. In the process, data which includes a password for that user, is transmitted from the GUI application 512 via the DIC 514 to the UMC 521. The UMC 521 uses the user directory 522 to check the user's access authorization for the desired service. If the user has authorization, the UMC 521 starts the UC 523. The UC 523 activates the appropriate DC 531 for the service provider 530. If a user has no such authorization, the UCM 521 prevents that user from accessing the service provider 530.

[0083] Furthermore, the user defines a desired job by [means of] the loaded local screen interface elements 511, with the job data being determined.

[0084] If the user has authorization for that service, the job data is transmitted to the UC 523. The UC 523 transmits the job data on to the corresponding DC 531 of the service provider 530. The DC 531 uses the data to determine user information, and transmits the user information to the UC 523. The UC 523 transmits the user information on to the GUI application 512. The GUI application 512 displays the user information, using the loaded GUI elements 511, on the screen 513 of the communication terminal 510.

Updating of the service system

[0085] The service system is updated when a new service is available in the service system (new implementation) or an already available service is modified (update).

New implementation

[0086] When a service is newly implemented, a new DC is linked to the service system in a corresponding manner to the already existing DCs. New screen interface elements associated with the new service are stored in the GUI directory. The GUI directory and the UC are matched to one another as appropriate.

[0087] The user directory and the UMC are matched to the new service, in terms of the user's access authorization.

[0088] Furthermore, during user registration, the user is informed by the manager that the new service is available in the service system. In a corresponding manner to the installation of the service system, the new screen interface elements associated with the new service are transmitted to the user or to the communication terminal, and are stored as new local GUI elements in the memory of that communication terminal. The GUI application is adapted as appropriate.

[0089] Once these procedures have been carried out, the user can use the new service. The principle of the service system remains unchanged in the new implementation.

Update

[0090] When a service is updated, the old DC carrying out the service is replaced by an updated DC. The old screen interface elements which are associated with the old DC and are managed by the manager are replaced by updated screen interface elements. The GUI directory and UC are adapted as appropriate.

[0091] Furthermore, during user registration, the user is informed by the manager that the updated service is available in the service system. In a corresponding manner to the installation of the service system, the updated screen interface elements associated with the updated service are transmitted to the user or to the communication terminal. The old local GUI elements associated with the old service are replaced by updated local GUI elements such that the updated screen interface elements are stored in the memory of the communication terminal as the updated local GUI element, instead of the old local GUI elements. The GUI application is adapted as appropriate.

[0092] Once these procedures have been carried out, the user can use the updated service. The principle of the service system remains unchanged in the update.

[0093] The invention has been described in detail with particular reference to preferred embodiments thereof and examples, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

[0094] [The following publication has been cited in this document:

[0095] (1) Principles of the World-Wide-Web (WWW) available on March 16, 1999, at:
<http://www.w3.org/>